

Claims

1. A liquid crystal display device comprising:

a first substrate;

5 a second substrate being opposite to the first substrate;

a first color filter formed on a first portion of the second substrate, the first portion corresponding to a first area of a display area, the first area being a border area of the display area;

10 a second color filter formed on a second portion of the second substrate, the second portion corresponding to a second area of the display area, the second area being the display area except the border area;

a first liquid crystal layer disposed between the first and the second substrate in the first area, and a zero electric field being formed on the first liquid crystal layer;

15 a second liquid crystal layer disposed between the first and the second substrate in the second area.

20 2. The liquid crystal display device of claim 1, wherein the zero electric field is formed by nullifying an electric potential difference in the first liquid crystal layer.

3. The liquid crystal display device of claim 1, further comprising:

a plurality of thin film transistors formed on a third portion of the first substrate, the third portion corresponding to the first area;

25 a plurality of first pixel electrode being arranged in a matrix shape on a fourth portion of the first substrate, the fourth portion corresponding to the first area, the first pixel electrodes electrically connected to electrodes of the thin film transistors

to which an image signal is applied; and
a common electrode formed on the first and the second color filter,
wherein the zero electric field is formed by nullifying an electric potential
difference in the first liquid crystal layer.

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4. The liquid crystal display device of claim 1, further comprising:
a plurality of thin film transistors formed on a third portion of the first
substrate, the third portion corresponding to the first area;
a plurality of first pixel electrode being arranged in a matrix shape on a fourth
10 portion of the first substrate, the fourth portion corresponding to the first area, the
first pixel electrodes electrically disconnected to electrodes of the thin film
transistors to which an image signal is applied; and
a common electrode formed on the first and the second color filter,
wherein the zero electric field is formed by nullifying an electric potential
15 difference in the first liquid crystal layer.

5. The liquid crystal display device of claim 1, wherein the zero electric
field is formed by forming an electrode layer on one of the first substrate and the
second substrate, the electrode layer making contact with the first liquid crystal
20 layer.

6. The liquid crystal display device of claim 1, wherein a thickness of the
first color filter is no less than a thickness of a pixel unit.

7. The liquid crystal display device of claim 1, wherein the first color
25 filter comprises three layers, and each of the three layers has a different thickness
from each other.

8. The liquid crystal display device of claim 7, wherein a thickness of the first color filter is regulated by controlling a coating thickness in a process in which the first color filter is coated on the second substrate or by a slit exposure process.

5 9. The liquid crystal display device of claim 1, wherein the first color filter comprises three layers, and the three layers has a same thickness.

10 10. The liquid crystal display device of claim 1, wherein the first color filter is a single layer.

11. An image displaying method comprising:

providing a first liquid crystal layer disposed in a first area with a first light, the first area being a border area of a display area, and a zero electric field being formed on the first liquid crystal layer;

15 transmitting the first light through the first liquid crystal layer to provide a first color filter layer in the first area with a second light, the second light being the transmitted first light;

transmitting the second light through the first color filter layer to display a borderline in the first area, a color of the borderline depending on the color of the first color filter layer;

20 providing a second area of the display area with a third light, the second area being the display area except the border area;

transmitting the third light through a second liquid crystal layer in the second area to provide a second color filter layer in the second area with a fourth light, the fourth light being the transmitted third light; and

25 transmitting the fourth light through the second color filter layer to output an modulated light on the second area, a color of the modulated light depending on the

color of the color filter layer.

12. The image displaying method of claim 11, wherein the zero electric field is formed by nullifying an electric potential difference in the first liquid crystal layer.

13. The image displaying method of claim 11, wherein a thickness of the first color filter layer is no less than a thickness of a pixel unit.

14. The image displaying method of claim 11, wherein the first color filter layer comprises three layers, each of the three layers has a different thickness from each other.

15. The image displaying method of claim 11, wherein the first color filter layer comprises three layers, and each of the three layers has a same thickness.

16. The image displaying method of claim 11, wherein the first color filter layer comprises a single layer.

17. An active matrix driving display device comprising:
a timing controller generating a first dummy line data, a second dummy line data, a first dummy pixel data and a second dummy pixel data, receiving a first display area data to generate a second display area data that is obtained by adding the first and second dummy pixel data to the first display area data, and generating a first control signal that allows the second display area data and the second dummy line data to be outputted to each row of a display area having a plurality of rows and columns, the first dummy line data having a first color information for each pixel in

a first border area corresponding to an upper borderline, the second dummy line data having a second color information for each pixel in a second border area corresponding to a lower borderline opposite to the upper borderline, the first dummy pixel data having a third color information for each pixel in a third border area corresponding to a left borderline, the second dummy pixel data having a fourth color information for each pixel in a fourth border area corresponding to a right borderline, the first display area data having a fifth color information for each pixel in the display area except the upper, lower, left and right borderline;

a first driver generating a first dummy line driving signal and a second dummy line driving signal base on the first control signal and generating a plurality of second control signals base on the first control signal, the first dummy line driving signal allowing the first dummy line data to be displayed on the first border area, the second dummy line driving signal allowing the second display area data to be displayed in a row unit on the display area except the upper, lower, left and right borderline;

a second driver receiving the first dummy line data, the second display area data and the second dummy line data from the timing controller and allowing the first dummy line data, the second display area data and the second dummy line data to be displayed on the display area in response to the first dummy line driving signal, the second control signals and the second dummy line driving signal.

18. The active matrix driving display device of claim 17, wherein a width of the first, second, third and fourth border area is no less than a pixel unit.

19. The active matrix driving display device of claim 17, wherein each of the first dummy line data, the second dummy line data, the first dummy pixel data and the second dummy pixel data has an information for at least one color.

20. The active matrix driving display device of claim 17, wherein the display device is one selected from the group consisting of a liquid crystal display device, an electroluminescent display device, a plasma display panel and field emission display device.

21. An image displaying method comprising:
generating a first dummy line data including a first color information for each pixel in a first border area of a display area having a plurality of rows and columns;
10 generating a second dummy line data including a second color information for each pixel in a second border area opposite to the first border area;
generating a first dummy pixel data including a third color information for each pixel in a third border area, the third border area being perpendicular to the first border area and having a first width;
15 generating a second dummy pixel data including a fourth color information for each pixel in a fourth border area, the fourth border area being opposite to the third border area and having a second width;
receiving first display area data to generate second display area data that are obtained by adding the first dummy pixel data to the first display area data, the first display area data having a fifth color information for each pixel in the display area
20 except the first, second, third and fourth border area;
generating a third display area data that is obtained by adding the second dummy pixel data to the second display area data; and
sequentially displaying the first dummy line data, the second display area data and the second dummy line data row-by-row on the display area.

22. The image displaying method of claim 21, wherein a width of the first,

second, third and fourth border area is no less than a pixel unit.

23. The image displaying method of claim 21, wherein each of the first dummy line data, the second dummy line data, the first dummy pixel data and the
5 second dummy pixel data has an information for at least one color.